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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,641	02/20/2004	James Slaski	4358-0115P	3441

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EXAMINER	
SHAH, UTPAL D	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,641	SLASKI, JAMES	
	Examiner	Art Unit	
	O'Neal R. Mistry	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/20/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This application has been examined.

Claims 1-16 are presented for examination.

Drawings

The Examiner contends that the drawings submitted on 2/20/2004 are acceptable for the examination proceedings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (USPN 6,323,987) in view of Huang et al (Publication: "An Edge Based Visual Tracking for Target within Complex Environment"), referred hereafter as Huang.

In regards to claim 1, Pinson discloses a method for tracking a target (col. 1), comprising: receiving an input image including a target having a target position (col. 3 lines 29-37, ie the system takes plurality of images); determining at least one component in the image according to an edge direction of connected pixels within the component (col. 10 lines 18-36, ie the system takes the edge of image and determines the target coordinates); updating the track based on the associated component to determine current target position (col. 12 line 57 – col. 13 line 10).

Pinson does not expressly disclose associating the at least one component with one of a plurality of predetermined tracks, where at least one track being associated with the target position, based on the edge direction of said component.

However, Huang discloses associating the at least one component with one of a plurality of predetermined tracks (abstract, 2.1 Template Matching Based on Edge), where at least one track being associated with the target position, based on the edge direction of said component (2.2 Implementation of the Matching, i.e. the template matching is done by edge detection).

Pinson & Huang are combinable because they are from the same field of endeavor i.e. object tracking (col. 1-2, Pinson) & (Huang, abstract).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine and incorporate the teachings taught by Huang into the system of Pinson.

The suggestion/motivation for doing so would have been to develop a method based on the distribution of image edges heas a number od advantages: (1) a shpar peak of the matched value, (2) insensitivity to the variance of light, and (3) higher immunity of additive noise (page 1996, Conlcusion), as taught by Huang.

Therefore, it would have been obvious to combine Pinson with Huang to obtain the invention as specified in claim 1.

In regards to claim 2, Pinson in view of Huang discloses said determining includes determining said at least one component based on said component being located within a predetermined search window associated with an estimated target position (col. 11 line 65 – col. 12 line 11 & col. 2 lines 15-38).

In regards to claim 3, Pinson in view of Huang discloses said determining includes determining said at least one component based on said pixels satisfying a predetermined threshold (col. 12 line 57- col. 13 line 11).

In regards to claim 4, Pinson in view of Huang discloses said updating includes determining velocity of the target (3.1 Design of Tracking Algorithm).

In regards to claim 5, Pinson in view of Huang discloses (in the entire section of 2.2 Implementation of the Matching) generating a track file including the plurality of tracks ("(a) building template"); and updating the track file by associating or deleting one of the

plurality of tracks in accordance with a predetermined threshold being satisfied ("(b) template matching (c) template updating. The whole matching process is shown in Fig. 1").

In regards to claim 6, Pinson in view of Huang discloses said updating includes updating the track file using said association or deletion in accordance with said one of the plurality of tracks associating or not associating with a component for a time period satisfying said predetermined threshold (col. 13 lines 30-56).

In regards to claim 7, Pinson in view of Huang discloses said associating includes assigning a weight for the association of the component to the one of the plurality of tracks (3.1 Design of Tracking Algorithm, page 1995 col. 2).

In regards to claim 8, Pinson in view of Huang discloses said updating includes updating the track based on the associated component having an assigned weight satisfying a predetermined threshold (2.2 Implementation of the Matching).

In regards to claim 9, Pinson in view of Huang discloses generating a track to associate with the component when failing to associate the component with one of the plurality of predetermined tracks (3.1 Design of Tracking Algorithm).

In regards to claim 10, Pinson discloses a processor for generating a plurality of associations between a component determined from an input image including a target having a target position and at least one predetermined track from a track file (col. 1 line 45- col. 2 line 25); said processor to select one of the plurality of associations of the component and the at least one track based on said selected association satisfying a predetermined threshold to determine current target position (col. 12 line 57 – col. 13 line 11).

Pinson does not expressly disclose wherein the at least one track being updated with the associated component in the track file in response to the selection of association.

However, Huang discloses wherein the at least one track being updated with the associated component in the track file in response to the selection of association (2.2 Implementation of Matching).

Pinson & Huang are combinable because they are from the same field of endeavor i.e. object tracking (col. 1-2, Pinson) & (Huang, abstract).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine and incorporate the teachings taught by Huang into the system of Pinson.

The suggestion/motivation for doing so would have been to develop a method based on the distribution of image edges heas a number od advantages: (1) a shpar peak of the matched value, (2) insensitivity to the variance of light, and (3) higher immunity of additive noise (page 1996, Conlcusion), as taught by Huang.

Therefore, it would have been obvious to combine Pinson with Huang to obtain the invention as specified in claim 10.

In regards to claim 11, Pinson in view of Huang discloses a memory to store instructions accessible by the processor (col. 3 lines 39-53).

In regards to claim 12, Pinson in view of Huang discloses the component being determined based on said component being located within a predetermined search window associated with an estimated target position (Introduction).

In regards to claim 13, Pinson discloses A machine-readable medium having stored thereon a plurality of executable instructions (col. 1), the plurality of instructions comprising instructions to: receive an input image including a target having a target position (col. 3 lines 29-37, i.e. the system takes plurality of images); determine at least one component in the image according to an edge direction of connected pixels within the component (col. 10 lines 18-36, i.e. the system takes the edge of image and determines the target coordinates); update the track based on the associated component to determine current target position (col. 12 line 57 – col. 13 line 10).

Pinson does not expressly disclose associate the at least one component with one of a plurality of predetermined tracks, where at least one track being associated with the target position, based on the edge direction of said component..

However, Huang discloses associate the at least one component with one of a plurality of predetermined tracks (abstract, 2.1 Template Matching Based on Edge), where at least one track being associated with the target position, based on the edge direction of said component (2.2 Implementation of the Matching, i.e. the template matching is done by edge detection).

Pinson & Huang are combinable because they are from the same field of endeavor i.e. object tracking (col. 1-2, Pinson) & (Huang, abstract).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine and incorporate the teachings taught by Huang into the system of Pinson.

The suggestion/motivation for doing so would have been to develop a method based on the distribution of image edges heas a number od advantages: (1) a shpar peak of the matched value, (2) insensitivity to the variance of light, and (3) higher immunity of additive noise (page 1996, Conlcusion), as taught by Huang.

Therefore, it would have been obvious to combine Pinson with Huang to obtain the invention as specified in claim 13.

In regards to claim 14, Pinson in view of Huang discloses said instructions to determine include instructions to determine said at least one component based on said component being located within a predetermined search window associated with an estimated target position (col. 11 line 65-col. 12 line 11 & col. 2 line 15- col. 2 line 38).

In regards to claim 15, Pinson discloses a method for tracking a target (col. 1), comprising: receiving an input image including a target having a target position (col. 3 lines 29-37, ie the system takes plurality of images); determining a plurality of components in the image according to an edge direction of connected pixels within the component (col. 10 lines 18-36, ie the system takes the edge of image and determines the target coordinates); updating the track based on the associated component to determine current target position (col. 12 line 57 – col. 13 line 10), determining the best set of track-to-component associations based on the total weight, calculated by adding the assigned weight for each track-to-component association in the set, for one of the sets summing up to a minimum value, wherein the best set determines the current target position (col. 14 line 30-67)

Pinson does not expressly disclose associating the plurality of components with a plurality of predetermined tracks, where at least one track being associated with the target position, based on the edge direction of said component, to generate a plurality of sets of track-to-component associations wherein each component being associated with no more than one track in a set; assigning a weight to each track-to-component association in a set based on the distance between each track and associated component as related to the target position.

However, Huang discloses associating the plurality of components with a plurality of predetermined tracks (abstract, 2.1 Template Matching Based on Edge), where at least one track being associated with the target position, based on the edge direction of said component (2.2 Implementation of the Matching, i.e. the template matching is done

by edge detection), to generate a plurality of sets of track-to-component associations wherein each component being associated with no more than one track in a set (4 Simulation of Experiments), assigning a weight to each track-to-component association in a set based on the distance between each track and associated component as related to the target position (3.1 Design of Tracking Algorithm, i.e. offset value)

Pinson & Huang are combinable because they are from the same field of endeavor i.e. object tracking (col. 1-2, Pinson) & (Huang, abstract).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine and incorporate the teachings taught by Huang into the system of Pinson.

The suggestion/motivation for doing so would have been to develop a method based on the distribution of image edges heas a number od advantages: (1) a shpar peak of the matched value, (2) insensitivity to the variance of light, and (3) higher immunity of additive noise (page 1996, Conlcusion), as taught by Huang.

Therefore, it would have been obvious to combine Pinson with Huang to obtain the invention as specified in claim 15.

In regards to claim 16, Pinson in view of Huang discloses said associating includes generating at least one set of track-to-component associations wherein at least one track in the set fails to associate with a component (3.1 Design of Tracking Algorithm, ie the system determines the location of the object and incorporates the error percentage.).

Conclusion

Examiner note: Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teaching for the art and are applied to the specific limitations within the individual claim, other passages and figures may applied as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirely as potential teaching all or part of the claimed invention, as well as the context of the a passage as taught by the prior art or disclosed by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to O'Neal R. Mistry whose telephone number is (571) 272-4052. The examiner can normally be reached on 9am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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